

TORREYA

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SOME AFFINITIES OF THE PHILIPPINE FLORA

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While all of the botanical papers which have been issued from time to time by the Philippine Bureau of Science and its predecessors have contributed greatly to our knowledge of the flora of the islands, one of the most recent * contains an introduction of such exceptional interest as to call for special notice.

It is hardly too much to say, that at the beginning of the American occupation information on this subject was drawn almost entirely from two sources, the great collection made by Hugh Cuming in the years 1835-40, and the work of the resident Spanish botanists. Cuming is said † to have taken back with him to England about 130,000 sheets of dried plants, and he also introduced into cultivation a number of the more striking orchids. His collection numbers exceeded 2,400, but they were not exclusively Philippine, some coming from Singapore and the Malay peninsula, and a very few from Sumatra. So far as their distribution between these larger geographical areas is concerned, the facts have long been definitely known; and although many species from this source have been wrongly credited to the Philippines in the past, and occasionally still are, this part of the problem has no longer any difficulties for a careful student. A list further exists purporting to give the locality for each plant, but these data have been shown ‡ to be incorrect in so large a proportion of the few cases where other evidence was available that the list must be held unreliable as a basis for dividing the

* Elmer D. Merrill, New or noteworthy Philippine plants, V. Philipp. Jour. Sci. 1: Suppl. (3) 169-246. 15 Au 1906.

† Jour. Bot. 3: 325. 1865.

‡ Jour. Bot. 24: 59, 60. 1886.

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archipelago into its floral provinces. Fortunately all necessity for depending on it is rapidly disappearing.

With the exception of Vidal and Loher, the Spaniards and the collectors other than Cuming have failed to furnish any substantial additional information on this point.

Blanco's *Flora de Filipinas*, of which the first edition appeared in 1837, described many species and even genera as new and identified the remainder with those of other regions. Many of his species and a few of his genera were good, but the descriptions were often incomplete and sometimes inaccurate, and long proved a stumbling-block in the path of European systematists, who attempted to correlate them with the Malayan and continental floras. One of Mr. Merrill's greatest achievements lies in the work done towards clearing up these species, and it may now be said that nearly all of them are at last satisfactorily known.

The most comprehensive treatment of this flora as a whole is the *Novissima Appendix*, published as a part of the third edition of the *Flora de Filipinas*. This is the work of two authors of very unequal merit. Naves, who did most of the monocotyledons, was capable of identifying and enumerating exotic species as Philippine, by the leaves alone or on the reports of the natives, even recording in a few cases orchids from the Andes or western Africa, although he failed to find a majority of those collected by Cuming on his own island. The other author, Fernandez-Villar, was evidently a man of profound ability, but in his determinations he constantly referred Philippine to Malayan or Indian species, wrongly in very many cases. Except where they had been represented in Cuming's and other collections and formed the bases of descriptions, he so far ignored the endemic species that he added a bare half dozen, whereas in the last four years some six or seven hundred have been published as new, and many others so diagnosed will doubtless appear shortly.

It should be remembered that these Spanish authors had either little or no material from outside for comparison, that they sent no specimens to outside herbaria to be named, and that if they preserved any material it has disappeared.

The only Spaniard to appreciate the necessity for such assistance

was Sebastian Vidal, who sent or took to Kew about 4,000 numbers, many of them gathered in the hitherto unexplored Benguet region of northern Luzon, whence have come so many of the most interesting recent discoveries.

These and the other rich collections in the Kew herbarium enabled Rolfe,* in 1884, to publish what has been till now the only important paper upon the affinities of the Philippine flora.

In the meantime explorations elsewhere have done much to reveal the secrets of the most nearly related regions. This is notably true of Henry's large collections in central and western China and in Formosa, and of Koorders' work in Minahassa, or northeastern Celebes. But the results of Loher's splendid Philippine collections have never been published, except as regards occasional groups.

The great energy with which exploration has been carried on in many districts in the Philippines and the large quantity of material thus obtained, have made it possible for Mr. Merrill to preface the paper here noted with a discussion of two sets of affinities, those with Celebes on the south, and those with Formosa, China, the Himalayas, and Japan on the north and west.

From his enumeration it appears that there are now over 50 species known from the Philippines and Celebes and nowhere else, and another 25 that extend from the Philippines through Celebes to more distant islands. Several further cases are cited where Philippine species have striking affinities with those of Celebes but fall short of specific identity. It may be worth noting that although some of these belong to the southern Philippines, others are widely distributed throughout the archipelago.

Far different is the case with the northern or semi-tropical affinities, for these with few exceptions are found in the flora of the Benguet and Lepanto-Bontoc provinces, the mountainous regions of northern Luzon. This list is so much more complicated in its nature that it is not easily summarized; but again over 50 species are known to be specifically identical with those of more northern countries, and an equal number of additional cases are cited where affinities lie definitely in this direction.

* Jour. Linn. Soc. 21: 283-316. *pl.* 10. 1884.

The large collection made for the New York Botanical Garden by Mr. R. S. Williams bears similar testimony to these facts; and the present indications seem to be, that when northern Luzon is fully explored, the most numerous cases of specific identity may be as would be expected with Formosa, but the more interesting and instructive cases with the hill district comprising part of southwestern China and northeastern India.

Bornean relationships are not discussed, owing doubtless to the less advanced state of exploration in Mindoro and Paragua than in Luzon and Mindanao, but these should prove equally interesting.

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COASTAL-PLAIN AMBER

BY EDWARD W. BERRY

Recent discussions of the occurrence of amber in the Cretaceous deposits of the Atlantic coastal plain seem to have overlooked the fact that amber was well known to some of the earlier geological explorers in this region and is frequently mentioned from a number of different localities. Professor John Finch, an Englishman, who visited southern Maryland as well as parts of the intervening region northward as far as Marthas Vineyard during the first quarter of the last century, seems to have been a keen observer and close thinker. On the eve of his departure for England he read a paper before the Philadelphia Academy which was subsequently published in the *American Journal of Science* under the title "Geological Essay on the Tertiary Formations in America."* Aside from the distinction of casting discredit on the term "Alluvial" which had been applied to the coastal plain deposits collectively, his essay contains a number of interesting suggestions such as that relating to the extension under Long Island of the equivalents of the Plastic clays of New Jersey. The present Cretaceous deposits are included in his "Plastic Clay and Sand Formation" which he considered of Tertiary age, one of his reasons for this being the presence of amber which he assumed

* Amer. Jour. Sci. 7: 31-43. 1824.